(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 608 353 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
31.01.1996 Bulletin 1996/05

(21) Application number: **92922437.6**

(22) Date of filing: **13.10.1992**

(51) Int. Cl.[6]: **A61K 7/48**

(86) International application number: **PCT/US92/08743**

(87) International publication number: **WO 93/07856**
(29.04.1993 Gazette 1993/11)

(54) LOW pH AQUEOUS COSMETIC GEL CONTAINING NON-IONIC POLYACRYLAMIDE DERIVATIVES

WÄSSERIGES,KOSMETISCHES GEL,MIT NIEDRIGEM PH,DAS NICHTIONOGENE POLYACRYLAMIDDERIVATE ENTHÄLT

GEL COSMETIQUE AQUEUX A pH FAIBLE CONTENANT DES DERIVES DE POLYACRYLAMIDE NON IONIQUE

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI NL SE

(30) Priority: **16.10.1991 US 778423**

(43) Date of publication of application:
03.08.1994 Bulletin 1994/31

(73) Proprietor: **RICHARDSON-VICKS, INC.**
Shelton, Connecticut 06484 (US)

(72) Inventors:
- **DECKNER, George Endel**
  Cincinnati, OH 45249 (US)
- **LOMBARDO, Brian Scott**
  Austin, TX 78731 (US)

(74) Representative: **Brooks, Maxim Courtney**
Newcastle-upon-Tyne NE12 9TS (GB)

(56) References cited:
EP-A- 0 067 658
EP-A- 0 170 394
EP-A- 0 282 316
EP-A- 0 312 208
GB-A- 2 236 760
US-A- 3 920 810
US-A- 4 039 501
US-A- 4 355 028
US-A- 4 837 019

Remarks:
The file contains technical information submitted after the application was filed and not included in this specification

EP 0 608 353 B1

Printed by Rank Xerox (UK) Business Services
2.9.7/3.4

Description

The present invention relates to cosmetic compositions. In particular it relates to stable low pH cosmetic compositions in the form of an aqueous gels which provide improved skinfeel and residue characteristics together with improved moisturizing, emolliency, rub-in and absorption characteristics.

The treatment of human skin with various agents has been undertaken for many years with the goal being to keep the skin in a smooth and supple condition. Skin has the tendency to dry out when exposed to conditions of low humidity or to detergent solutions for extended periods. Skin is made up of several layers of cells which coat and protect the keratin and collagen fibrous proteins that form the skeleton of its structure. The outermost of these layer, referred to as the stratum corneum, is known to be composed of 25nm (250 A) protein bundles surrounded by 8nm (80 A) thick layers. Anionic surfactants and organic solvents typically penetrate the stratum corneum membrane and, by delipidization (i.e. removal of the lipids from the stratum corneum), destroy its integrity. This destruction of the skin surface topography leads to a rough feel and may eventually permit the surfactant or solvent to interact with the keratin, creating irritation.

It is now recognized that maintaining the proper water gradient across the stratum corneum is important to its functionality. Most of this water, which is sometimes considered to be the stratum corneum's plasticizer, comes from inside the body. If the humidity is too low, such as in a cold climate, insufficient water remains in the outer layers of the stratum corneum to properly plasticize the tissue; and the skin begins to scale and becomes itchy. Skin permeability is also decreased somewhat when there is inadequate water across the stratum corneum. On the other hand, too much water on the outside of the skin causes the stratum corneum to ultimately sorb three to five times its own weight of bound water. This swells and puckers the skin and results in approximately a two to three fold increase in the permeability of the skin to water and other polar molecules.

Conventional cosmetic cream and lotion compositions as described, for example, in Sagarin, Cosmetics Science and Technology, 2nd Edition, Volume 1, Wiley Interscience (1972) and Encyclopedia of Chemical Technology, Third Edition, Volume 7 are known to provide varying degrees of emolliency, barrier and water-retention (moisturizing) benefits. However, they can also suffer serious negatives in terms of skinfeel (i.e. they often feel very greasy on the skin) as well as having poor rub-in, absorption and residue characteristics. Other cosmetic compositions are disclosed in, for example, U.S.-A-4,837,019 and U.S.-A-4,863,725.

US-A-3,920,810 discloses ophthalmic solutions comprising 0.05-20% high molecular weight polyacrylamides whose pH may be as low as 3.

EP-A-282,316 discloses a hydrogel composition for dressing skin wounds comprising 1-20% of a high molecular weight, nonionic polyacrylamide.

US-A-4,837,019 discloses a skin treatment composition, in the form of an aqueous gel, comprising 1-10% polyglyceryl methacrylate.

US-A-4,355,028 discloses an aqueous gel composition for the treatment of acne, comprising 7% benzoyl peroxide, 5% salicylic acid and 1 or 3% polyacrylamide.

Further, it is desirable to deliver many cosmetic ingredients and pharmaceutical actives from low pH carriers; however, to date there have not been developed suitable low pH vehicles. Also many pharmaceutical and cosmetic actives require a low pH environment for efficacy and/or stability. Current low pH vehicles contain natural gums and inorganic clays and powders and have not proved satisfactory. These systems exhibit poor stability and overdry the skin and are cosmetically undesirable, i.e., have poor aesthetics.

Polyacrylic acids, e.g., carbomers, are well known for thickening cosmetic compositions; however these thickeners cannot be used at a low pH. Therefore, a great need exists for cosmetically elegant and stable low pH cosmetic compositions with a relatively high viscosity which can be used to deliver pharmaceutical and cosmetic actives.

Applicants have found that the use of specific polyacrylamides having high molecular weights in low pH cosmetic compositions provide excellent cosmetic benefits as well providing improved stability for low pH systems. Further high level of solvents such as alcohol and other water-soluble components which may be necessary to solubilize the active can be included in the compositions.

The present invention therefore provides low pH gel-type cosmetic compositions which are excellent carriers for certain low pH cosmetic ingredients and pharmaceutical actives and further have a high solvent tolerance.

The present invention also provides stable low pH gel-type cosmetic compositions which provide improvements in absorption, residue and skinfeel characteristics without detriment to either short or longer term moisturizing effectiveness or emolliency.

It is therefore an object of the present invention to provide improved cosmetic compositions which are excellent carriers for certain low pH cosmetic ingredients and pharmaceutical actives and which provide reduced tack and provide the user with a smoother skinfeel.

These and other objects of this invention will become apparent in light of the following disclosure.

Accordingly, the present invention provides a skin care composition in the form of an aqueous gel comprising: from 0.05% to 20% of a non-ionic polyacrylamide having a molecular weight of from 1,000,000 to 30,000,000 wherein said composition has a pH below 4.

All percentages and ratios used herein are by weight and all measurements at 25°C unless otherwise indicated.

The low pH compositions of the present invention are formed from the combination of a non-ionic polymer and water where the pH is adjusted to a pH of below 4, preferably below 3.5 and most preferably below 3.0. All levels and ratios are by weight of total composition, unless otherwise indicated. These compositions also have a high solvent tolerance, i.e., high level of solvents such as alcohol and other water-soluble components which may be necessary to solubilize the active can be included in the compositions.

Nonionic Polyacrylamide The non-ionic polymers useful in the present invention are polyacrylamides and substituted polyacrylamides, branched or unbranched. These polymers are non-ionic water-dispersible polymers which can be formed from a variety of monomers including acrylamide and methacrylamide which are unsubstituted or substituted with one or two alkyl groups (preferably C_1-C_5). Preferred acrylate amides and methacrylate amides in which the amide nitrogen is unsubstituted, or substituted with one or two C_1-C_5 alkyl groups (preferably: methyl, ethyl or propyl), for example, acrylamide, methacrylamide, N-methylacrylamide, N-methylmethacrylamide, N,N-dimethylmethacrylamide, N-isopropylacrylamide, N-isopropylmethacrylamide and N,N-dimethylacrylamide. These monomers are generally disclosed in U. S.-A-4,963,348. These copolymers may optionally be formed using conventional neutral crosslinking agents such as dialkenyl compounds. The use of such crosslinking agents for cationic polymers is disclosed in U.S.-A-4,628,078 and U.S.-A-4,599,379. These non-ionic copolymers have a molecular weight greater than 1,000,000 preferably greater than 1,500,000 and range up to 30,000,000. Preferably these non-ionic polyacrylamides are predispersed in a water-immiscible solvent such as mineral oil and the like, containing a high HLB surfactant (HLB from 7 to 10) which helps to facilitate water dispersibility of the polyacrylamide. Most preferred for use herein is the non-ionic polymer under the CTFA designation: polyacrylamide and isoparrafin and laureth-7, available as Sepigel from Seppic Corporation.

These non-ionic polyacrylamides are present at a level from 0.05% to 20%, preferably from 0.5% to 10% and most preferably from 1% to 10%.

These compositions are preferably combined with a variety of optional Ingredients. Most preferably, these gels are used as a carrier for pharmaceutical actives, most preferably anti-acne actives. The compositions of the present invention are most useful for those active ingredients which are acidic in nature or which require a low pH for optimal delivery or stability.

Pharmaceutical Actives Pharmaceutical actives useful in the present invention include any chemical material or compound suitable for topical administration which induces any desired local or systemic effect. These actives are present at a level from 0.1% to 20%. Such agents include, but are not limited to anti-acne drugs, non-steroidal anti-inflammatory drugs, steroidal anti-inflammatory drugs, sunless tanning agents, sunscreen agents, wound healing agents, skin bleaching or lightening agents, antihistaminic drugs, antitussive drugs, antipruritic drugs, anticholinergic drugs, anti-emetic and antinauseant drugs, anorexic drugs, central stimulant drugs, antiarrhythmic drugs, B-adrenergic blocker drugs, cardiotonic drugs, antihypertensive drugs, diuretic drugs, vasodilator drugs, vasoconstrictor drugs, anti-ulcer drugs, anesthetic drugs, antidepressant drugs, tranquilizer and sedative drugs, antipsychotic drugs, antimicrobial drugs, antineoplastic drugs, antimalarial drugs, muscle relaxant drugs, antispasmodic drugs, antidiarrheal drugs and bone-active drugs and mixtures thereof.

Also useful in the present invention are sunless tanning agents including dihydroxyacetone, glyceraldehyde, indoles and their derivatives, and the like. These sunless tanning agents may also be used in combination with conventional sunscreen agents such as those disclosed in Segarin, et al., at Chapter VIII, pages 189 et seq., of Cosmetics Science and Technology, as well as wound healing agents such as peptide derivatives, yeast, panthenol, lamin and kinetin.

Other useful skin actives include skin bleaching (or lightening) agents including but not limited to hydroquinone, ascorbic acid, kojic acid and sodium metabisulfite.

Most preferred drug actives are the anti-acne drugs. Anti-acne drugs preferred for use in the present invention include the keratolytics such as salicylcic acid, sulfur, lactic acid, glycolic acid, pyruvic acid, urea, resorcinol, and N-acetylcysteine; retinoids such as retinoic acid and its derivatives (e.g., cis and trans); antibiotics and antimicrobials such as benzoyl peroxide, octopirox, erythromycin, tetracyclin, triclosan, azelaic acid and its derivatives, phenoxy ethanol and phenoxy proponol, ethylacetate, clindamycin and meclocycline; sebostats such as flavinoids; alpha and beta hydroxy acids; and bile salts such as scymnol sulfate and its derivatives, deoxycholate, and cholate.

Vitamins Various vitamins may also be included in the compositions of the present invention. For example, ascorbic acid, panthothenic acid, Vitamin E, tocopherol and the like.

Water-soluble Humectant These compositions can also contain one or more humectants/moisturizers. A variety of humectants/moisturizers can be employed and can be present at a level of from 1% to 30%, more preferably from 2% to 8% and most preferably from 3% to 5%. These materials include polyhydroxy alcohols such as sorbitol, glycerin, hexanetriol, propylene glycol, hexylene glycol and the like; polyethylene glycol; sugars and starches; sugar and starch derivatives (e.g. alkoxylated glucose); D-panthenol; hyaluronic acid; lactamide monoethanolamine; acetamide monoethanolamine; 2-pyrrolidone-5-carboxylic acid, and mixtures thereof.

Preferred humectants/moisturizers for use in the compositions of the present invention are the C_3-C_6 diols and triols. Especially preferred is the triol, glycerin. The compositions of this invention may also contain pharmaceutically acceptable optional components that modify the physical and/or therapeutic effects of the compositions. Such optional components

may include, for example, additional solvents, emulsifiers, gelling agents, fragrances, preservatives, and stabilizers. Other useful humectants include glucosides (e.g., Glucam E10 and E20 available from Amerchol Corporation), lactamide monoethanolamine, and acetamide monoethanolamine.

Mixtures of these water-soluble humectants can also be used.

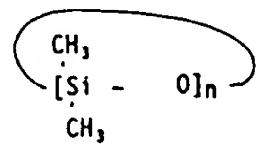
In the present invention the water-soluble humectant, is present at a level of from 0.5% to 20%, preferably from 1% to 10%, more preferably from 4% to 8% by weight of the composition.

Optional Hydrophilic Gelling Agent The low pH gel compositions of the present invention may also contain an additional hydrophilic gelling agent (which is stable at a low pH) at a level preferably from 0.05% to 1%, more preferably from 0.1% to 1%. The gelling agent preferably has a viscosity (1% aqueous solution, 20°C, Brookfield RVT) of at least 4000 mPa.s (cps), more preferably at least 10,000 mPa.s (cps), and most preferably at least 50,000 mPa.s.

Suitable hydrophilic gelling agents can generally be described as water-soluble or colloidally water-soluble polymers, and include cellulose ethers (e.g. hydroxyethyl cellulose, methyl cellulose), hydroxypropyl guar gum and xanthan gum. Also useful are clays such as hectorite (Veegum) and bentonite.

Emollients The compositions of the present invention may also comprise at least one emollient (stable at low pH). Preferred emollients are volatile silicone oils, non-volatile emollients, and mixtures thereof. The compositions of the present invention more preferably comprise at least one volatile silicone oil which functions as a liquid emollient, or especially in a mixture of volatile silicone oils and non-volatile emollients. The term "volatile", as used herein, refers to those materials which have a measurable vapor pressure at ambient temperature.

Volatile silicone oils useful in the compositions of the present invention are preferably cyclic or linear polydimethylsiloxanes containing from 3 to 9, preferably from 4 to 5, silicon atoms. The following formula illustrates cyclic volatile polydimethylsiloxanes useful in the compositions disclosed herein:



wherein n equals from 3 to 7. Linear polydimethylsiloxanes contain from 3 to 9 silicon atoms per molecule and have the following general formula:

$$(CH_3)_3Si\text{-}O\text{-}[Si(CH_3)_2\text{-}O]_n\text{-}Si(CH_3)_3$$

wherein n equals from 1 to 7. Linear volatile silicone materials generally have viscosities of about 0.5 mm^2s^{-1} (centistokes) at 25°C while cyclic materials typically have viscosities of less than about 10 mm^2s^{-1} (centistokes). A description of various volatile silicone oils is found in Todd, et al., "Volatile Silicone Fluids for Cosmetics", Cosmetics & Toiletries, 91, pages 27-32 (1976).

Examples of preferred volatile silicone oils useful herein include: Dow Corning 344, Dow Corning 345, and Dow Corning 200 (manufactured by Dow Corning Corp.); Silicone 7207 and Silicone 7158 (manufactured by the Union Carbide Corp.); SF 1202 (manufactured by General Electric); and SWS-03314 (manufactured by SWS Silicones, Inc.).

The present compositions also preferably contain one or more non-volatile emollients. Such materials include hydrocarbons (e.g., the Permethyls), propoxylated alcohols, non-volatile silicone oils, and mixtures thereof. Emollients among those useful herein are described in 1 Cosmetics, Science and Technology 27-104 (M. Balsam and E. Sagarin, Ed.; 1972), and U.S.-A-.

Non-volatile silicone oils useful as an emollient material include polyalkylsiloxanes, polyalkiyarylsiloxanes, and polyethersiloxane copolymers. The essentially non-volatile polyalkyl siloxanes useful herein include, for example, polydimethyl siloxanes with viscosities of from 5 to 100,000 mm^2s^{-1} (centistokes) at 25°C. Among the preferred non-volatile emollients useful in the present compositions are the polydimethyl siloxanes having viscosities from 10 to 400 mm^2s^{-1} (centistokes) at 25°C. Such polyalkyl siloxanes include the Vicasil series (sold by General Electric Company) and the Dow Corning 200 series (sold by Dow Corning Corporation). Polyalkylaryl siloxanes include poly methylphenyl siloxanes having viscosities of from 15 to 65 mm^2s^{-1} (centistokes) at 25°C. These are available, for example, as SF 1075 methylphenyl fluid (sold by General Electric Company) and 556 Cosmetic Grade Fluid (sold by Dow Corning Corporation). Useful polyether siloxane copolymers include, for example, a polyoxyalkylene ether copolymer having a viscosity of about 1200 to 1500 mm^2s^{-1} (centistokes) at 25°C. Such a fluid is available as SF-1066 organosilicone surfactant (sold by General Electric Company). Polysiloxane ethylene glycol ether copolymers are preferred copolymers for use in the present compositions.

The emollients typically comprise in total from 2% to 10%, and most preferably from 2% to 6% by weight of the compositions of the present invention.

A number of additional water-soluble materials can be added to the composition of the present invention, however. Such materials include the other humectants such as sorbitol, propylene glycol, ethoxylated glucose and hexanetriol; keratolytic agents such as salicylic acid; proteins and polypeptides and derivatives thereof; water-soluble or solubilizable preservatives such as Germall 115, methyl, ethyl, propyl and butyl esters of hydroxybenzoic acid, EDTA, Euxyl(RTM)K400, Bromopol (2-bromo-2-nitropropane-1,3-diol), phenoxypropanol, DMDM Hydantoin/3-Iodo-2-Propynyl Butyl Carbamate (available as Glydant® and Glydant Plus®); anti-bacterials such as Irgasan (RTM) and phenoxyethanol (preferably at levels of 0.5% to 5%); soluble or colloidally soluble moisturizing agents such as hyaluronic acid, chitosan, and coloring agents; perfumes and perfume solubilizers etc. Water is also present at a level of from 50% to 99.3%, preferably from 80% to 95% by weight of the compositions herein.

Other Optional Components A variety of additional ingredients may be added to the emulsion compositions of the present invention. These additional ingredients include various polymers for aiding the film-forming properties and substantivity of the formulation, preservatives for maintaining the antimicrobial integrity of the compositions, antioxidants, and agents suitable for anesthetic purposes such as fragrances, pigments, and colorings.

The compositions of the invention are in aqueous gel form and are preferably formulated so as to have product viscosity of at least 4,000 and preferably in the range from 4,000 to 300,000 mPa.s (cps), more preferable from 20,000 to 200,000 mPa.s (cps) and especially from 80,000 to 150,000 mPa.s (cps) (20°C, neat, Brookfield RVT). Preferably the compositions are visually translucent. The compositions are also substantially free of oil, i.e. contain less than 1%, and preferably less than 0.1% of materials which are insoluble or which are not colloidallysoluble in the aqueous gel matrix at 10°C. "Colloidally-soluble" herein refers to particles in the usual colloidal size range, typically from 1 to 1000 nm, especially from 1 to 500 nm. In highly preferred embodiment, the compositions are substantially free of materials which are insoluble or not colloidally soluble in distilled water at 20°C. Such materials include many conventional emollient materials such as hydrocarbon oils and waxes, fatty alcohols, certain fatty alcohol ethers and sterols extracted from lanolin, beeswax derivatives, vegetable waxes, sterols and amides. The compositions can, however, contain low levels of insoluble ingredients added, for example for visual effect purposes, e.g., titianated mica.

These compositions may include additional co-solvents such as ethanol, isopropanol, butylene glycol, hexylene glycol, polyethylene glycol and polypropylene glycol.

The compositions of the invention have no need of additional surfactant materials which are conventionally added to cosmetic cream and lotion compositions in order to emulsify a water-in-soluble oily phase.

The following examples further describe and demonstrate embodiments within the scope of the present invention. The examples are given solely for the purpose of illustration and are not to be construed as limitations of the present invention.

Ingredients are identified by chemical or CTFA name.

EXAMPLES

Example I

An anti-acne composition is made by combining the following components using conventional mixing technology.

Ingredient	(%W/W)
Water, Purified	54.0
Alcohol SD 40	40.0
Polyacrylamide and C_{13-14} Isoparaffin and Laureth-7[1]	4.0
Salicylic Acid	2.0

[1] Available as Sepigel from Seppic Corporation.

Water is added to a suitable size container. While mixing at a moderate speed (300 rpm), the polyquaternium-32 and mineral oil is added to the water. Separately, the alcohol is placed in a container and covered. Using a Lightnin' Mixer with a 3 blade paddle prop, the salicylic acid is added to the alcohol and mixed at a low speed (100 rpm) until all salicylic acid is dissolved. The alcohol is slowly added to the water phase to form a gel. The resulting gel is mixed at moderate speed until uniform.

The compositions display improved skinfeel and residue characteristics together with excellent moisturizing, emolliency, rub-in and absorption characteristics.

Example II

A sunless tanning composition is made by combining the following ingredients utilizing conventional mixing techniques as described above in Example I.

Ingredient	(%W/W)
Water, Purified	91.5
Polyacrylamide and C_{13-14} Isoparaffin and Laureth-7	3.0
Dihydroxyacetone	3.0
Benzyl Alcohol	0.5

Example III

An anti-acne composition is made by combining the following components as in Example I.

Ingredient	(%W/W)
Water, Purified	88.0
Polyacrylamide and C_{13-14} Isoparaffin and Laureth-7	2.0
Benzoyl Peroxide	10.0

Example IV

A topical analgesic composition is made by combining the following ingredients.

Ingredient	(%W/W)
Water, Purified	52.395
Alcohol SD 40	40.000
Polyacrylamide and C_{13-14} Isoparaffin and Laureth-7	4.000
Ibuprofen	5.000
Glycerin	1.000
Aloe Vera Gel	0.500
Menthol	0.100
Disodium EDTA	0.005

The alcohol is added to a suitable size container. Using a Lightnin' mixer with a 3 blade paddle prop, the ibuprofen is added to the alcohol and mixed at low speed (100 rpm) until the ibuprofen is dissolved. Menthol is added to the alcohol and mixed until dissolved. Separately, water is added to a suitable size container. Aloe vera gel and disodium EDTA are added to the water and mixed at low speed (100 rpm) until completely dissolved. The water phase is then added to the alcohol phase and mixed until clear. Gylcerin is added and mixed until clear. While mixing at moderate speed (300 rpm), the polyacrylamide and C_{13-14} isoparaffin and laureth-7 is added to form a gel. The resulting gel is mixed at moderate speed until uniform.

Example V

An anti-acne composition is made by combining the following components as in Example I with the pH adjusted to below about 4.0 with a solution of 10% citric acid.

Ingredient	(%W/W)
Water, Purified	87.5
Polyacrylamide and C_{13-14} Isoparaffin and Laureth-7	2.0
Urea	10.0
Benzyl Alcohol	0.5

Example VI

A moisturizing composition is made by combining the following components as in Example I.

Ingredient	(%W/W)
Water, Purified	93.5
Polyacrylamide and C_{13-14} Isoparaffin and Laureth-7	2.0
Glycerin	3.0
Benzyl Alcohol	0.5
2-pyrrolidone 5-Carboxylic Acid	1.0

Claims

1. A skin care composition in the form of an aqueous gel comprising: from 0.05% to 20% of a non-ionic polyacrylamide having a molecular weight of from 1,000,000 to 30,000,000 wherein said composition has a pH below 4.

2. A composition according to Claim 1 wherein the polyacrylamide comprises monomers selected from acrylamide and methacrylamide which are unsubstituted or substituted with at least one alkyl groups having from 1 to 5 carbon atoms, preferably wherein the polyacrylamide comprises monomers selected from the group consisting of acrylamide, methacrylamide, N-methylacrylamide, N-methylmethacrylamide, N,N-dimethylmethacrylamide, N-isopropylacrylamide, N-isopropylmethacrylamide and N,N-dimethylacrylamide.

3. A composition according to Claim 2 wherein said composition has a pH below 3.5.

4. A composition according to Claim 3 wherein said composition further comprises a humectant, preferably wherein said humectant is selected from the group consisting of polyhydroxy alcohols, glycerin, hexanetriol, propylene glycol, hexylene glycol, polyethylene glycol, 2-pyrrolidone-5-carboxylic acid, D-panthenol, hyaluronic acid, lactamide monoethanolamine, acetamide monoethanolamine and mixtures thereof.

5. A composition according to Claim 6 wherein said composition further comprises from 0.1% to 20% of a pharmaceutical active.

6. A composition according to Claim 5 wherein said pharmaceutical active is selected from the group consisting of anti-acne drugs, non-steroidal anti-inflammatory drugs, steroidal anti-inflammatory drugs, sunless tanning agents, sunscreen agents, wound healing agents, skin bleaching or lightening agents, antihistaminic drugs, antitussive drugs, antipruritic drugs, anticholinergic drugs, anti-emetic and antinauseant drugs, anorexic drugs, central stimulant

drugs, antiarrhythmic drugs, β-adrenergic blocker drugs, cardiotonic drugs, antihypertensive drugs, diuretic drugs, vasodilator drugs, vasoconstrictor drugs, anti-ulcer drugs, anesthetic drugs, antidepressant drugs, tranquilizer and sedative drugs, antipsychotic drugs, antimicrobial drugs, antineoplastic drugs, antimalarial drugs, muscle relaxant drugs, antispasmodic drugs, antidiarrheal drugs and bone-active drugs and mixtures thereof.

7. A composition according to Claim 6 wherein said composition further comprises an emollient, preferably wherein said emollient is a non-volatile silicone oil selected from the group consisting of polyalkylsiloxanes, polyalkyarylsiloxanes, and polyethersiloxane copolymers.

8. A composition according to Claim 7 wherein said pharmaceutical active is an anti-acne active selected from the group consisting of salicylcic acid, sulfur, resorcinol, N-acetylcysteine, octopirox, retinoic acid and its derivatives, benzoyl peroxide, erythromycin, tetracyclin, azelaic acid and its derivatives, phenoxy ethanol and phenoxy proponol, ethylacetate, clindamycin, meclocycline, flavinoids, lactic acid, glycolic acid, pyruvic acid, urea, scymnol sulfate and its derivatives, deoxycholate and cholate and mixtures thereof.

9. A composition according to Claim 8 wherein said pharmaceutical active is an anti-acne active selected from the group consisting of salicylcic acid, sulfur, resorcinol, octopirox, retinoic acid and its derivatives, benzoyl peroxide, erythromycin, tetracyclin and mixtures thereof.

10. The composition of Claim 9 wherein said drug active is a sunless tanning agent selected from the group consisting of dihydroxyacetone, indole derivatives and mixtures thereof and wherein said composition further comprises a sunscreen active.

Patentansprüche

1. Hautpflegezusammensetzung in der Form eines wäßrigen Geles, umfassend: 0,05% bis 20% eines nichtionischen Polyacrylamides mit einem Molekulargewicht von 1,000.000 bis 30,000.000, wobei die genannte Zusammensetzung einen pH-Wert unter 4 besitzt.

2. Zusammensetzung nach Anspruch 1, worin das Polyacrylamid Monomere umfaßt, welche unter Acrylamid und Methacrylamid ausgewählt sind, die unsubstituiert oder mit mindestens einer Alkylgruppe mit 1 bis 5 Kohlenstoffatomen substituiert sind, vorzugsweise worin das Polyacrylamid Monomere umfaßt, welche von der aus Acrylamid, Methacrylamid, N-Methylacrylamid, N-Methylmethacrylamid, N,N-Dimethylmethacrylamid, N-Isopropylacrylamid, N-Isopropylmethacrylamid und N,N-Dimethylacrylamid bestehenden Gruppe ausgewählt sind.

3. Zusammensetzung nach Anspruch 2, wobei die genannte Zusammensetzung einen pH-Wert unter 3,5 besitzt.

4. Zusammensetzung nach Anspruch 3, wobei die genannte Zusammensetzung ferner ein Feuchthaltemittel umfaßt, vorzugsweise wobei das genannte Feuchthaltemittel von der aus Polyhydroxyalkoholen, Glycerin, Hexantriol, Propylenglykol, Hexylenglykol, Polyethylenglykol, 2-Pyrrolidon-5-carbonsäure, D-Panthenol, Hyaluronsäure, Lactamidmonoethanolamin, Acetamidmonoethanolamin und Gemischen hievon bestehenden Gruppe ausgewählt ist.

5. Zusammensetzung nach Anspruch 6, wobei die genannte Zusammensetzung ferner 0,1% bis 20% eines pharmazeutischen Wirkstoffes umfaßt.

6. Zusammensetzung nach Anspruch 5, wobei der genannte pharmazeutische Wirkstoff von der Gruppe ausgewählt ist, welche aus Anti-Akne-Arzneimitteln, nicht-steroiden entzündungshemmenden Arzneimitteln, steroiden entzündungshemmenden Arzneimitteln, Mitteln für das sonnenlose Bräunen, Sonnenschutzmitteln, Wundheilungsmitteln, hautbleichenden oder -aufhellenden Mitteln, Antihistaminika, schleimlösenden Arzneimitteln, Arzneimitteln gegen Juckreiz, anticholinergen Arzneimitteln, Arzneimitteln gegen Brechreiz und Übelkeit, Arzneimitteln gegen Anorexie, das Zentralnervensystem stimulierenden Arzneimitteln, Antiarrhythmika, β-adrenergen Blockern, kardiotonischen Arzneimitteln, Antihypertensiva, Diuretika, gefäßerweiternden Arzneimitteln, gefäßverengenden Arzneimitteln, Arzneimitteln gegen Geschwüre, Anästhetika, Antidepressiva, Tranquilizern und Sedativa, Antipsychotika, antimikrobiellen Arzneimitteln, antineoplastischen Arzneimitteln, Antimalaria-Arzneimitteln, die Muskel entspannenden Arzneimitteln, krampflösenden Arzneimitteln, Arzneimitteln gegen Durchfall und knochenwirksamen Arzneimitteln und Gemischen hievon besteht.

7. Zusammensetzung nach Anspruch 6, wobei die genannte Zusammensetzung ferner ein Emolliens umfaßt, vorzugsweise wobei das genannte Emolliens ein nicht-flüchtiges Siliconöl ist, welches von der aus Polyalkylsiloxanen, Polyalkylarylsiloxanen und Polyethersiloxancopolymeren bestehenden Gruppe ausgewählt ist.

8. Zusammensetzung nach Anspruch 7, wobei der genannte pharmazeutische Wirkstoff ein Anti-Akne-Wirkstoff ist, welcher von der aus Salicylsäure, Schwefel, Resorcin, N-Acetylcystein, Octopirox, Retinoesäure und deren Derivaten, Benzoylperoxid, Erythromycin, Tetracyclin, Azelainsäure und deren Derivaten, Phenoxyethanol und Phenoxypropanol, Ethylacetat, Clindamycin, Meclocyclin, Flavinoiden, Milchsäure, Glykolsäure, Brenztraubensäure, Harnstoff, Scymnolsulfat und deren Derivaten, Deoxycholat und Cholat und Gemischen hievon bestehenden Gruppe ausgewählt ist.

9. Zusammensetzung nach Anspruch 8, wobei der genannte pharmazeutische Wirkstoff ein Anti-Akne-Wirkstoff ist, welcher von der aus Salicylsäure, Schwefel, Resorcin, Octopirox, Retinoesäure und deren Derivaten, Benzoylperoxid, Erythromycin, Tetracyclin und Gemischen hievon bestehenden Gruppe ausgewählt ist.

10. Zusammensetzung nach Anspruch 9, wobei der genannte Arzneimittelwirkstoff ein Mittel für das sonnenlose Bräunen ist, welches von der aus Dihydroxyaceton, Indolderivaten und Gemischen hievon bestehenden Gruppe ausgewählt ist, und wobei die genannte Zusammensetzung ferner ein Sonnenschutzmittel umfaßt.

Revendications

1. Composition de soin de la peau sous forme de gel aqueux, comprenant: de 0,05% à 20% d'un polyacrylamide non ionique ayant une masse moléculaire de 1 000 000 à 30 000 000, dans laquelle ladite composition possède un pH inférieur à 4.

2. Composition selon la revendication 1, dans laquelle le polyacrylamide comprend des monomères choisis parmi l'acrylamide et le méthacrylamide qui sont non substitués ou substitués par au moins un groupe alkyle possédant de 1 à 5 atomes de carbone, de préférence dans laquelle le polyacrylamide comprend des monomères choisis dans le groupe constitué par l'acrylamide, le méthacrylamide, le N-méthylacrylamide, le N-méthylméthacrylamide, le N,N-diméthylméthacrylamide, le N-isopropylacrylamide, le N-isopropylméthacrylamide et le N,N-diméthylacrylamide.

3. Composition selon la revendication 2, dans laquelle ladite composition possède un pH inférieur à 3,5.

4. Composition selon la revendication 3, dans laquelle ladite composition comprend en outre un humectant, ledit humectant étant de préférence choisi dans le groupe constitué par les polyols, la glycérine, l'hexanetriol, le propylèneglycol, l'hexylèneglycol, le polyéthylèneglycol, l'acide 2-pyrrolidone-5-carboxylique, le D-panthénol, l'acide hyaluronique, la lactamide-monoéthanolamine, l'acétamide-monoéthanolamine et leurs mélanges.

5. Composition selon la revendication 4, dans laquelle ladite composition comprend, en outre, de 0,1% à 20% d'une substance pharmaceutique active.

6. Composition selon la revendication 5, dans laquelle ladite substance pharmaceutique active est choisie dans le groupe constitué par les médicaments antiacnéiques, les médicaments anti-inflammatoires non stéroïdiens, les médicaments anti-inflammatoires stéroïdiens, les agents de bronzage sans soleil, les écrans solaires, les agents de cicatrisation des plaies, les agents de blanchiment ou d'éclaircissement de la peau, les médicaments antihistaminiques, les médicaments antitussifs, les médicaments antiprurigineux, les médicaments anticholinergiques, les médicaments antiémétiques et antinauséeux, les médicaments anorexiques, les médicaments stimulant le système nerveux central, les médicaments antiarythmiques, les inhibiteurs β-adrénergiques, les médicaments cardiotoniques, les médicaments anti-hypertenseurs, les médicaments diurétiques, les médicaments vasodilatateurs, les médicaments vasoconstricteurs, les médicaments antiulcéreux, les médicaments anesthésiques, les médicaments antidépresseurs, les médicaments tranquillisants et sédatifs, les médicaments antipsychotiques, les médicaments antimicrobiens, les médicaments antinéoplasiques, les médicaments antipaludiques, les médicaments myorelaxants, les médicaments antispasmodiques, les médicaments antidiarrhéiques et les médicaments ostéoactifs, et leurs mélanges.

7. Composition selon la revendication 6, dans laquelle ladite composition comprend, en outre, un émollient, de préférence dans laquelle ledit émollient est une huile de silicone non volatile choisie dans le groupe constitué par les polyalkylsiloxanes, les polyalkylarylsiloxanes et les copolymères polyéther/siloxane.

8. Composition selon la revendication 7, dans laquelle ladite substance pharmaceutique active est une substance antiacnéique choisie dans le groupe constitué par l'acide salicylique, le soufre, le résorcinol, la N-acétylcystéine, l'octopirox, l'acide rétinoïque et ses dérivés, le peroxyde de benzoyle, l'érythromycine, la tétracycline, l'acide azélaïque et ses dérivés, le phénoxyéthanol et le phénoxypropanol, l'acétate d'éthyle, la clindamycine, la méclocycline, les flavinoïdes, l'acide lactique, l'acide glycolique, l'acide pyruvique, l'urée, le scymnol sulfate et ses dérivés, le désoxycholate et le cholate, et leurs mélanges.

9. Composition selon la revendication 8, dans laquelle ladite substance pharmaceutique active est une substance antiacnéique choisie dans le groupe constitué par l'acide salicylique, le soufre, le résorcinol, l'octopirox, l'acide rétinoïque et ses dérivés, le peroxyde de benzoyle, l'érythromycine, la tétracycline, et leurs mélanges.

10. Composition selon la revendication 9, dans laquelle ledit médicament actif est un agent de bronzage sans soleil choisi dans le groupe constitué par la dihydroxyacétone, les dérivés d'indole, et leurs mélanges, et dans laquelle ladite composition comprend, en outre, un écran solaire actif.